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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,946	09/21/2000	Mathias Benz	6110-186STA1	5265

7590 03/28/2002
Perkins Smith & Cohen
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EXAMINER

STRICKLAND, JONAS N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 03/28/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/601,946

Applicant(s)

BENZ ET AL.

Examiner

Jonas N Strickland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because where only a single figure is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG." must not appear (See MPEP 608.02). It is suggested that Applicant delete "Fig. 1" on the drawing and within the specification. Applicant may refer to the drawing in the specification as -- The Figure --.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 4-9 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-3 recite, "characterized in that". This is improper and unclear claim language, which renders the claim indefinite. It is suggested that Applicant's recite -- comprising--.

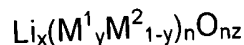
Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley (US Patent 4,567,031) in view of Lecerf et al. (US Patent 4,980,080) and Von Sacken (US Patent 5,180,574).

Applicant claims a process for preparing lithium transition metallates of the general formula:



The metallate is prepared by calcining an intimate mixture of oxygen-containing transition metal compounds and an oxygen-containing lithium compound, which has been obtained by treating a solid powdered transition metal compound, with a solution of the lithium compound and drying, characterized in that at least the M^1 compound is used in the form of a powder with a specific surface area of at least $20 \text{ m}^2/\text{g}$ (BET) and calcinations is performed in a moving bed.

Riley discloses a process for preparing a mixed metal oxide with the formula $[\text{Li}(\text{Co}_{0.5}\text{Ni}_{0.5})\text{O}_2]$ comprised by preparing a mixture of a soluble oxygen-containing salt

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of lithium and a soluble oxygen-containing salt of at least one metal (transition metal compound), and calcining the mixture to form the mixed metal oxide (see abstract).

Furthermore, the reference teaches wherein the mixture is dried (col. 2, lines 28-37).

Riley continues to teach wherein the calcinations produce a high surface area powder of about 20-40 m²/g (col. 3, lines 50-52). However, Riley does not disclose Applicant's claimed lithium compound or performing calcinations in a moving bed.

Lecerf et al. teaches a metallate formula having the formula $\text{Li}_{0.93}\text{Ni}_{0.91}\text{Co}_{0.09}\text{O}_2$ (col. 6, lines 64-68).

Von Sacken teaches producing lithium mixed metal oxides using rotary calciners and fluid beds, which are moving beds (col. 9, lines 22-26 and col. 13, lines 10-18).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Riley et al by producing the instantly claimed lithium mixed metal oxide as disclosed by Lecerf et al and performing calcinations in a moving bed for the production of lithium mixed metal oxides as taught by Von Sacken, because the composition as claimed by Lecerf et al may be prepared by the process of Riley, which discloses a process for the preparation of lithium metal oxides. Furthermore, it would have been obvious to one of ordinary skill in the art to perform calcining of lithium mixed metals in moving beds, because Von Sacken teaches producing lithium mixed metal oxides wherein calcining is performed in moving beds. Such modification would have been obvious to one of ordinary skill in the art, because one would expect a process for calcining lithium mixed metal oxides as taught by Von Sacken and a lithium metallate formula having the formula $\text{Li}_{0.93}\text{Ni}_{0.91}\text{Co}_{0.09}\text{O}_2$ as taught by Lecerf et al. to be similarly

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useful and applicable to a process for preparing lithium metallates, which includes a step of calcining the lithium, transition metal precursor as taught by Riley.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley (US Patent 4,567,031) in view of Lecerf et al. (US Patent 4,980,080) and Von Sacken (US Patent 5,180,574) as applied to claim 1 above, and further in view of Mao (US Patent 5,728,367).

Applicant claims with respect to claim 2, wherein the transition metallate is milled and sieved after calcinations and the finer fraction from sieving is recycled to the moving bed.

The teachings of Riley, Lecerf et al, and Von Sacken have already been discussed with respect to claim 1. While Riley and Von Sacken both teach calcining the lithium transition metallates, the teachings of Riley, Lecerf et al, and Von Sacken do not disclose wherein the transition metallate is milled and sieved after calcinations and is later recycled to the moving bed.

However, Mao teaches a method for preparing lithiated transition metal oxides and wherein the materials after heating (calcining) are subjected to a grinding process in a conventional mill (col. 4, lines 61-64). Mao continues to teach that after the milling process that the lithium transition metal oxide by-products may be re-used and reprocessed (col. 5, lines 4-14).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Riley, Lecerf et al, and Von Sacken by milling the transition metallate after calcining and recycling the milled transition metallate back to the reaction bed,

because Mao teaches after calcining a lithium transition metal oxide, the lithium transition metal oxide is milled and recycled back to the reactor. Such modification would have been obvious to one of ordinary skill in the art, because one would expect a process for fabricating lithium transition metal oxides as taught by Mao to be similarly useful and applicable to a process for producing lithium transition metal oxides as taught by Riley, Lecerf et al, and Von Sacken.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley (US Patent 4,567,031) in view of Lecerf et al. (US Patent 4,980,080) and Von Sacken (US Patent 5,180,574) as applied to claim 1 above, and further in view of Yazami et al. (WO 94/25398).

Applicant claims with respect to claim 3, wherein the mixed transition metal compound contains at least some of the M^2 compound is used as the M^1 compound.

The teachings of Riley, Lecerf et al, and Von Sacken have been discussed with respect to claim 1. However, Riley, Lecerf et al, and Von Sacken do not disclose a mixed transition metal compound which contains at least some of the M^2 compound is used as the M^1 compound.

Yazami et al teaches a method for the preparation of lithium and transition metal mixed oxides having the formula $Li_{ny}(M_{1-x}M'_x)_nO_{nz}$ in which n is 1 or 2, and M and M' are the same or different.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Riley, Lecerf et al, and Von Sacken by having a mixed transition metal compound wherein the transition metal compound M^1 and M^2 contain the same

compound, because Yazami et al teaches a method for producing lithium transition metal oxides, wherein the transition metals, M and M' are the same or different. Such modification would have been obvious to one of ordinary skill in the art, because one would expect a process for producing lithium and transition metal oxides, wherein the transition metals, M and M' are the same or different as taught by Yazami et al to be similarly useful and applicable to a process for producing lithium transition metal mixed oxides as taught by Riley, Lecerf et al, and Von Sacken.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sheargold et al. (US Patent 5,702,679) discloses a method for producing lithium mixed metal oxides wherein calcining is performed in a moving bed.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH. 7:30-5:00, off 1st Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703-308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1495.

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Jonas N. Strickland
March 25, 2002


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